Remarks

Claims 13 and 17 have been amended. Claims 1-27 remain pending in the present application. Applicants respectfully request reconsideration and allowance of the pending claims.

Specification

The Office Action requested that Applicants add a "Summary of the Invention" description to the application. However, Applicants kindly point out that both the MPEP and 37 C.F.R. §1.73 do no require the presence of a "Summary of the Invention." They merely indicate where in the application the "Summary of the Invention" should be placed if Applicants choose to add one. 37 C.F.R. §1.73 only states that a "Summary of the Invention" should or may be included. It does not state "must" or "shall." Accordingly, Applicants have elected not to include a "Summary of the Invention" as this is within the discretion and right of the Applicants.

Abstract

The Office Action reminded Applicants of the proper language and format for an abstract of the disclosure. Applicants respectfully point to controlling 37 CFR 1.72(b) which states a maximum word count requirement that an Abstract "...may not exceed 150 words in length", but such rule is absolutely silent as to any minimum word count. The Office Action objection appears to rely on an MPEP form paragraph which includes the statement, "The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words." The MPEP statement uses the term "should" (as opposed to "must"), and thus the MPEP statement

itself expresses a non-mandatory requirement. In conclusion, Applicants respectfully

submit that the present Abstract complies with the requirements of 37 CFR 1.72(b) and

the MPEP. Accordingly, Applicants respectfully decline to amend the Abstract. With

respect to any past, present or any ultimately-implemented Abstract or amendment

thereof, Applicants reiterate and embrace the 37 CFR 1.72(b) provision that "The

abstract will not be used for interpreting the scope of the claims."

Claim Rejection under 35 USC 102 (Bealkowski)

The Official Action rejected claims 1-27 under 35 USC 102(e) as being

anticipated by Bealkowski et al. (US Patent 6,330,656). Applicants have made minor

amendments to claims 13 and 17 in order to improve their readability and not for

reasons of patentability. Applicants' intention is to retain the original claim scope of

claims 13 and 17. Applicants respectfully request allowance of claim 1-27.

As is well-established, in order to successfully assert a *prima facie* case of

anticipation, the Official Action must provide a single prior art document that includes

every element and limitation of the claim or claims being rejected. Therefore, if even

one element or limitation is missing from the cited document, the Official Action has not

succeeded in making a prima facie case.

Claim 1

Applicants' invention of claim 1 recites:

> 1. A method comprising
> receiving a request to remove a hot plug module from a running computing device; and
> updating a snoop filter of the running computing device to cease snooping of the hot plug module.

Bealkowski discloses at column 4, lines 7-11 that the core logic includes a snoop

filter 329 that is designed to limit the amount of snoop transactions between busses of

any two processors. The snoop filter of Bealkowski appears to be limited to snoop

transactions between busses of the processors. Further, Bealkowski does not disclose

that the processors have hot plug capabilities. In other words, Bealkowski makes no

mention of removing from or adding a processor to a running system. Accordingly,

there is no need to update the snoop filter of the running computing device to cease

snooping of the hot plug module since the snoop filter is limited to non-hot plug modules

of the Bealkowski system.

Despite Bealkowski disclosing a snoop filter 329, the Official Action appears to

be relying on the disclosed Partition Descriptor as a teaching of a snoop filter.

However, the Partition Descriptor merely allocates PCI slots of the system to partitions

of a physically partitioned computer system. A snoop filter, on the other hand, is a

cache coherency mechanism that tracks cache line information in an attempt to reduce

snoop latency and/or the number of snoop transactions between caching agents of a

computer system. The Partition Descriptor of Bealkowski is not a cache coherency

mechanism nor does it track cache line information in an attempt to reduce snoop

latency and/or the number of snoop transaction between caching against. Accordingly,

one skilled in the art simply would not regard the Partition Descriptor as a snoop filter,

especially in light of Bealkowski describing a system having a snoop filter 329.

Since Bealkowski does not disclose updating a snoop filter of a running

computing device to cease snooping of a hot plug module, Bealkowski does not

anticipate the invention of Applicants' claim 1. Applicants respectfully request the

rejection of claim 1 be withdrawn.

Claim 7

Applicants' invention of claim 7 requires a switch to cease issuing snoop transactions to a coupler of the plurality of couplers associated with a hot plug module to be removed from the running computing device.   As indicated above, Bealkowski only teaches that the snoop filter 329 filters snoop transactions associated with the processors and does not teach removing the processors from a running computer system. Accordingly, Bealkowski only teaches issuing snoop transactions to non-hot plug modules (e.g. processors) and filtering snoop transactions from non-hot plug modules. Bealkowski appears to provide no teaching of issuing snoop transactions to hot plug modules, and therefore provides no teaching of ceasing the issuance of snoop transactions to couplers associated with hot plug modules as required by Applicants' claim 7.

Bealkowski therefore does not anticipate the invention of Applicants' claim 7. Applicants' respectfully request the rejection claim 7 be withdrawn.

Claim 13

Applicants' invention of claim 13 requires causing caching agents associated with a coupler of the computing device to write back modified lines to a memory of the computing device, and updating a valid vector to indicate that the coupler is no longer associated with one or more valid caching agents. The Official Action appears to be relying on PCI agents disclosed by Bealkowski for a teaching of one or more caching agents. However, Bealkowski provides no indication that the PCI agents actually cache lines of a memory, let alone, modify cache lines and write back modified lines to a memory as required by claim 13. One skilled in the art would not consider the PCI agents of Bealkowski as caching agents, especially since Bealkowski describes the

snoop filter only in terms of the processors and does not indicate that the PCI agents

write back modified lines to memory prior to being removed from a partition.

Bealkowski therefore does not anticipate the invention of claim 13. Applicants

respectfully request the rejection claim 13 be withdrawn.

Claim 17

The invention of claim 17 requires a hot plug module comprising one or more

caching agents having cached lines of the memory, and a processor to cause a snoop

filter to mark the one or more caching agents as invalid snooping agents in response to

a request to remove the hot plug module. Bealkowski does not disclose a hot plug

module having one or more caching agents. In particular, the hot plug PCI agents of

Bealkowski are not caching agents. Further, Bealkowski does not disclose updating a

snoop filter to mark the one or more caching agents of the hot plug module as invalid

snooping agents. The snoop filter 329 of Bealkowski only deals with non-hot plug

modules (e.g. processors).

Bealkowski therefore does not anticipate the invention of claim 17. Applicants

respectfully request the rejection claim 17 be withdrawn.

Claim 22

The snoop filter 329 of Bealkowski is not updated in response to a request to

remove a hot plug module. Further, the Partition Descriptor does not store coherency

information for lines·cached by caching agents of the hot plug module. Bealkowski

therefore does not anticipate the invention of claim 22 which requires storing coherency

information for lines cached by caching agents of hot plug modules. Applicants

respectfully request the rejection claim 22 be withdrawn.

Claims 2-6

Each of claims 2-6 includes claim 1 as a base claim. Accordingly, each of claims 2-6 is allowable for at least the reasons stated above in regard to claim 1. Moreover, each of claims 2-6 includes additional limitations not taught by Bealkowski. For example, Bealkowski does not disclose updating the snoop filter 329 to indicate that a hot plug module is not a valid snooping agent (claims 2-3); or disabling a snoop filter associated with a hot plug module (claim 4). Bealkowski also does not disclose marking all cache lines tracked by the snoop filter 329 as not being present in the hot plug module (claim 5), or updating presence vectors to indicate that associated cache lines are not present in the hot plug module (claim 6).

Bealkowski does not anticipate the invention of Applicants' claim 2-6. Applicants respectfully request the rejection of claim 2-6 be withdrawn.

Claims 8-12

Each of claims 8-12 includes claim 7 as a base claim. Accordingly, each of claims 8-12 is allowable for at least the reasons stated above in regard to claim 7. Moreover, each of claims 8-12 includes additional limitations not taught by Bealkowski. For example, Bealkowski does not disclose a switch that causes a hot plug module to write modified cache lines to a memory (claim 8); a switch that issues snoop transactions only to couplers with valid snooping agents (claim 9); a switch that comprises presence vectors associated with cache lines of a hot plug module (claim 10); a switch that comprises a separate snoop filter 329 for each coupler; (claim 11); or switches that collectively track states of cache lines of hot plug modules (claim 12).

Bealkowski does not anticipate the invention of Applicants' claim 8-12. Applicants respectfully request the rejection of claim 8-12 be withdrawn.

Claims 14-16

Each of claims 14-16 includes claim 13 as a base claim. Accordingly, each of claims 14-16 is allowable for at least the reasons stated above in regard to claim 13. Moreover, each of claims 14-16 includes additional limitations not taught by Bealkowski. For example, Bealkowski does not disclose updating a valid vector to indicate that a coupler is no longer associated with one or more <u>caching agents</u> in response to a hot plug event (claim 14); updating a valid vector to indicate that another coupler is now associated with one or more valid <u>caching agents</u> in response to a hot plug addition request (claim 15); or clearing a bit of a valid vector to indicate that a coupler is no longer associated with one or more valid <u>caching agents</u> (claim 16).

Bealkowski does not anticipate the invention of Applicants' claim 14-16. Applicants respectfully request the rejection of claim 14-16 be withdrawn.

Claims 18-21

Each of claims 18-21 includes claim 17 as a base claim. Accordingly, each of claims 18-21 is allowable for at least the reasons stated above in regard to claim 17. Moreover, each of claims 18-21 includes additional limitations not taught by Bealkowski. For example, Bealkowski does not disclose a hot plug module comprising a processor and one or more associated memory caches (claim 20); or a hot plug module comprising an input/output hub and one or more associated memory caches (claim 21).

Bealkowski does not anticipate the invention of Applicants' claim 18-21. Applicants respectfully request the rejection of claim 18-21 be withdrawn.

<u>Claims 23-27</u>

Each of claims 23-27 includes claim 22 as a base claim. Accordingly, each of claims 23-27 is allowable for at least the reasons stated above in regard to claim 22. Moreover, each of claims 23-27 includes additional limitations not taught by Bealkowski. For example, Bealkowski does not disclose a controller of a snoop filter that updates <u>coherency information</u> in response to a request to add a <u>hot plug module</u> (claim 23); or a controller of a snoop filter that updates <u>coherency information</u> in response to a request to remove a <u>hot plug module</u>. (claims 24-27).

Bealkowski does not anticipate the invention of Applicants' claim 23-27. Applicants respectfully request the rejection of claim 23-27 be withdrawn.

Conclusion

The foregoing is submitted as a full and complete response to the Official Action

mailed May 20, 2004. Applicants submit that the pending claims are in condition for

allowance. Reconsideration is requested, and allowance of the now pending claims is

earnestly solicited.

Should it be determined that an additional fee is due under 37 CFR §§1.16 or

1.17, or any excess fee has been received, please charge that fee or credit the amount

of overcharge to deposit account #02-2666. If the Examiner believes that there are any

informalities which can be corrected by an Examiner's amendment, a telephone call to

the undersigned at (480) 554-4198 is respectfully solicited.

                                               Respectfully submitted,

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Dated August 25, 2004

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